Mission Possible

Will U.S. Space Station's Crew Find Happiness? Maybe So, if the Space Station Is Ever Launched

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WASHINGTON—The National Aeronautics and Space Administration wants to put up an orbiting space station with seven people in it. Space planners have already decided that the crew shouldn't include a woman because that would cause problems with the men. Rather, the crew should include *two* women. That, the planners think, would ease tensions all around.

Sex in the space station?

"We've got to deal with it," says Bryant Cramer, a member of NASA's Space Station Task Force. "We'd be irresponsible if we didn't."

Important as it is, the happiness of the crew is just one of the space agency's concerns. Towering over everything else is the question of whether a permanent, manned outpost in space is needed at all. The answer will be as important as President Kennedy's decision to send Americans to the moon and President Nixon's choice of the close-to-home space shuttle over a more ambitious plan for manned adventures in the solar system.

Decision for Reagan

President Reagan must decide whether the payoff from having a space station will be worth the $7.5 billion to $9 billion that NASA says must be spent to build and launch it. That's just the initial price tag for putting a bare-bones model into orbit by 1991. Features added to create a more palatial version by the year 2000 would lift the expense to $20 billion, NASA says. (By comparison, $25 billion was spent to put a total of a dozen astronauts briefly on the moon.)

NASA wants the president to put $200 million in space-station start-up money into the fiscal-1985 budget to be submitted in January, and Mr. Reagan may make his intentions known well before then. For one thing, a new space machine would make a glamorous talking point during a reelection campaign. Democratic presidential contender John Glenn, the ex-astronaut, is already backing the idea. His main Democratic rival, Walter Mondale, hasn't yet taken a position. As a senator in the early 1970s, Mr. Mondale argued forcefully against appropriations for the space shuttle.

For two years now, NASA Administrator James Beggs has campaigned inside and outside the government to tip the White House in favor of the space station. Couching his argument in terms he thinks will appeal to Reaganites, Mr. Beggs warns that the Russians are trying to "dominate space," and insists that the U.S. must counter with a space station "if we are to maintain our preeminence." He openly touts the project as a possible prelude to colonizing the moon and sending men to the planet Mars, bold talk not heard around the space agency in years.

Even so, White House officials complain that NASA's in-house proposals for the station be stodgy descriptions of a station that just goes around and around in space. "They're coming up with boring stuff," says one adviser.

If Mr. Beggs wraps the station in the flag of national prestige, that is due in no small part to NASA's difficulty in drawing up a list of tasks that can be performed in a space habitat and nowhere else. NASA certainly has tried, however. In speech after speech, Mr. Beggs and his colleagues have portrayed the station as a uniquely useful base for scientists and the military and for corporations wanting to work on industrial projects in zero gravity.

But, with some exceptions, support from those three fields has proved rather thin so far.

Astronomers and other scientists might be expected to be first in line for an "on-orbit laboratory," as NASA calls the space station. (Real spacemen say "on orbit" rather than "in orbit"; there is no special reason.) Man-tended instruments in the station 400 miles up could observe wavelengths of celestial light that don't reach the earth's surface. NASA also plans to fly the station in loose convoy with the envisioned ground-directed Space Telescope, which from time to time may need human repair.

Yet organized science is turning up its nose. In September a panel of the National Academy of Sciences told NASA it sees "no scientific need" for the station because the space shuttle can deploy robot instruments just as well. One specific beef of astronomers is that fuel leaks and messy human beings may surround the station with instrument-fogging contamination not encountered on uninhabited orbiting platforms.

Distraction From Planets?

Scientists also warn that the space station may gobble up funds that otherwise could go for unmanned probes of the planets, much as the space shuttle did during the 1970s. "Certainly that's a fear that a number of us have," says Clark Chapman, the chairman of the American Astronomical Society's Division for Planetary Sciences.

NASA's old-timers liken this naysaying to scientists' early coolness toward plans to fly men to the moon. The grumbling that the Apollo program was an unscientific stunt changed to praise once astronauts started bringing back lunar-rock samples, and loud complaints arose when the flights abruptly stopped for lack of money.

Hoped-for Pentagon support for the space station hasn't materialized, either. In his speeches, NASA's Mr. Beggs says that military men could use the station variously as a command post, a satellite repair shop, a storage facility and an earth-surveillance platform. Some Pentagon studies show that a space command post might indeed be needed to direct a "Star Wars" missile defense, should that idea ever take shape. But for now, the Defense Department doesn't want to share NASA's station or help pay for it, an official amiably told Mr. Beggs last summer.

One military drawback is NASA's plan to confine its station's orbit to the earth's middle latitudes, so that the space shuttle can more easily haul up components from the Cape Canaveral, Fla., launching site. Military men would prefer a pole-to-pole orbit, the better to look down on the entire earth.

Aerospace Cheerleaders

The strongest words of support for NASA's station are coming from businessmen who hope to use it or help build it. Predictably, aerospace companies are cheerleaders, and not just because they would profit directly from production contracts. Fairchild Industries Inc. has its own plan for launching in 1987 an unmanned orbiting platform that various customers can use as a factory offering the benefits of zero gravity; heavy and light metals, for example, can be alloyed more uniformly in weightlessness than on earth.

NASA's manned station also will offer such service, but Fairchild Vice President John Townsend says he doesn't regard it as a competitor that will steal his company's business. Rather, Mr. Townsend welcomes the government station as "a visible American presence in space" that would increase public support for the whole space program.

McDonnell Douglas Corp. is a potential customer for both Fairchild's platform and NASA's space station. For two years McDonnell Douglas has been using brief flights on the space shuttle to experiment with a machine that purifies pharmaceutical-drug ingredients in zero gravity (gravity tends to muddy purity). The project's director, James Rose, says that by 1987 the company will be ready to start automated commercial production aboard "something like" Fairchild's free-flying platform, with the space shuttle collecting purified drug material for delivery to earth at intervals of four to six months.

But Mr. Rose says he would like to move this operation to the government space station once the station doors open in the 1990s. "The space station would greatly enhance the development and growth of the kind of industry we're trying to create," he says.

Not Unanimous

Not all business voices are that enthusiastic. Gregg Fawkes, an analyst for the National Chamber Foundation, a research affiliate of the U.S. Chamber of Commerce, contends that the station would be a departure from NASA's proper role of conducting space research, reflecting instead an urge for another big Apollo-like project to keep the agency busy for years to come. "We want to ask whether the space station will really stimulate space commercialization," Mr. Fawkes says, "and whether there are other ways to accomplish the same goal."

nently manned station, costing perhaps $30,000 a day just to keep each crew member alive, would involve extended intermittent flights by the space shuttle. The airplane-like shuttle craft now go up in orbit for just a week at a time, but they could be modified to handle month-long missions. Thus, a relay of manned orbiters, perhaps leading a convoy of free-flying unmanned science and factory platforms, might do just about all the jobs expected of a permanent space station.

That idea has been considered and rejected, says John Hodge, the director of the 25-member task force that NASA has assembled to plan the space station. Such a plan would divert the four-orbiter fleet from its main function of carrying cargo to and from space, he says, adding: "A bus just doesn't make a very good hotel."

Fighting Cabin Fever

Among the task force's more offbeat assignments is to plan how to keep crew members from sinking irritably into "cabin fever" during their three-month duty tours. Coached by outside sociologists, task force member Bryant Cramer has made a close study of how small groups of people are affected by long isolation in submarines, Antarctic winter quarters and ocean-bottom research labs. Soviet cosmonauts have become bored and hostile during endurance flights in their Salyut space station; two crew members are said to have become so angry with ground controllers that they stopped speaking for two days.

Such findings will help shape the U.S. space station's design. To help fight boredom, crew members will need windows to look out of. And people stuck in the space station will be more content if they don't feel totally detached from everyday life below. "It may be more important for the crew aloft to watch the evening news than you or I," says Mr. Cramer.

A careful male-female mix is just one consideration in determining the crew's makeup. Sociologists believe that an odd-numbered group is better able than an even-numbered one to avoid deadlocks and deal with an inevitable splitting into factions. That's why more harmony is expected with seven people than with eight. Says Mr. Cramer: "Two factions of four people each is about enough to start a revolution."